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ABSTRACT

This paper reviews selected literature pertaining to quality circles (defined as a small group of people who meet voluntarily, on a regular basis, to learn and apply techniques for identifying, analyzing, and solving work-related problems), in particular that literature focusing on communication-related variables. It examines 52 studies from the communication, management, and organizational psychology literature, primarily in the area of employee and organizational effects of quality circle participation. The paper also offers directions for future research, particularly in the context of communication-related variables. Seventy references are attached. (Author/SR)

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QUALITY CIRCLES: A SELECTED REVIEW OF THE LITERATURE

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Abstract

This paper provides a selected review of the literature pertaining to quality circles. More specifically, it examines 52 studies from the communication, management, and organizational psychology literature primarily in the area of employee and organizational effects of quality circle participation. In addition to reviewing this literature, the paper attempts to offer directions for future research, particularly in the context of communication related variables.

Quality Circles: A Selected Review of the Literature

Introduction

In recent years, organizational scholars and practitioners have shown increasing interest in the quality circle concept. In order to combat cries of "underparticipation and underutilization of human resources in organizations" (Katz & Kahn, 1978, p. 767), quality circles have emerged as a part of a larger movement in the United States involving participative management. By 1983, it was estimated that over 25,000 quality circles were operating in U.S. organizations (Barra, 1983). In 1985, researchers estimated that over 90% of the Fortune "500" companies now had quality circle programs in their organizational structures (Lawler & Mohrman, 1985).

Operationally, a quality circle is a small group of people (usually 5 to 12) who meet voluntarily, on a regular basis, to learn and apply techniques for identifying, analyzing, and solving work-related problems (Dewar, 1980). Normally, the circle leader is the regular work leader/supervisor. Members are given training in group problem-solving and communication skills, and spend one hour per week in circle meetings. The hour per week is usually company-paid time.

Quality circles attempt to reduce one's job to

individual, definable parts that have a value placed on each part of the process. The circle, rather than management, is responsible for improving the economics of every phase of the process (Avery, 1985). Quality circles theoretically distribute power to the bottom of the organizational structure and provide employees with a sense of importance and influence. Quality circles have the potential to "change the way managers manage and organizations organize by changing the very nature of the relationships among themselves, employees, and supervisors" (Stohl, 1986, p. 529). Quality circles provide a channel for management to fully recognize the power of the communication process.

One of the primary benefits gained from quality circles is productivity improvement resulting from efficient problem-solving efforts of circle members (e.g., Cole, 1980; Dewar, 1980). Quality circle members develop new skills that benefit the organization, as well as themselves, in problem solving, statistical analysis, leadership, and interpersonal communication.

> Once installed, quality circles produce dramatic results for the organization. They improve morale, increase a sense of loyalty to the organization, and foster a sense of teamwork among employees who participate. They improve overall productivity of the organization, and they improve the quality of

> the product or service. And they reduce grievances, lost time, accidents, scrap, attrition, absenteeism, and tardiness. In short, quality circles solve problems and save the organization money. (Thompson, 1982, p. 11)

Yager (1981) stated, "Nearly every evaluation study that has been done to date has demonstrated anywhere from 4:1 to 8:1 return on investment within the first year of circle activities" (p. 99). Dewar (1980) asserted, "Every organization using quality circles reports improvement in employee morale" (p. 3). While it is clear that organizations typically have very positive experiences with quality circles, sweeping endorsements of quality circle effectiveness can be disillusioning for a couple of reasons.

First, the evidence regarding the impact on productivity and morale is (a) generated by independent evaluators with little substantiation (Marks, Mirvis, Hackett, & Grady, 1984); (b) "in the form of self-reported success stories and noted cases" (Wood, Hull, & Azumi, 1983, p. 43); and (c) "almost exclusively on quality improvement, cost reduction, and attitude/morale as outcome variables" (Daniels, 1984, p. 1).

Second, the history of quality circles in the U.S. is brief and as Thompson (1982) observed, "Rapid growth has occurred without benefit of experience" (preface).

The long-term effects of quality circle programs upon organizational dynamics are still beyond the range of appreciation (Daniels, 1984). The information from evaluation methods remains supported by anecdotal data and isolated cases (Jenkins & Shimada, 1983).

The purpose of this paper is to examine the quality circle literature and in particular that focusing upon communication related variables. As a form of group process in organizations, quality circles inherently reflect a communication driven phenomenon (Creagh & Smeltzer, 1984). Much of the training, in fact, for quality circles consists of interpersonal, group, and organizational communication instruction (Stinnett & Perrill, 1982).

Review of the Literature

Stinnett and Perrill (1982) conducted a study of quality circles and organizational change in a circuit board factory. Pre-test/post-test questionnaires measuring both productivity and "human factors" (attitudes and perceptions) were administered to all 97 employees in the company participating in the quality circle program. Productivity measures were also obtained. No control group was utilized in the study.

Perceptual assessments of product quality (importance of producing a quality product), work measures, reward,

leadership, structure, participation, communication, satisfaction, peer relationships, and the group process were examined. In order to measure productivity, quality data were collected for reduction in scrap, reduction in rework, lower cost per unit, and increased rate of production. Correlational t tests compared perceptual changes occurring over a six-month interval. Although the researchers did not make any attempt to produce causal relationships from the data collected, results indicated potential improvements that deserve validation in other organizational settings.

In a follow-up study, Stinnett, Perrill, Boster, and Borstelmann (1983) conducted an attitudinal study over a two-year period. These researchers extended and broadened their earlier study by adding a third measure in the original factory and by having a control group. Six hundred employees in four high-technology manufacturing organizations involved in quality circle programs participated. An analysis of variance was used to examine the data. Results indicated a strong effect for location (factory) but little evidence of change over time. Procedural and measurement problems were suggested to account for the lack of significant results.

In a study of quality circles in a computer-related manufacturing organization, Srinivasan (1983) administered measures of productivity, group behavior, and interpersonal

behavior to members and non-members at two points in time, two months apart. Among the findings of the study were that: (a) neither group demonstrated improvement in its productivity level significantly over time; (b) group and interpersonal behavior, as measured in this study, did not change over the testing period; (c) non-members perceived group behavior problems but not to any significant degree; and (d) members demonstrating initially higher productivity levels tended to manifest lower levels of interpersonal behavioral skills on both an overall and a dimensional basis.

Jenkins and Shimada (1983) conducted a controlled field experiment on the impact of quality circle training programs on worker performance and job attitudes in an electronics company over a nine-month period. Pre-test/post-test measures were utilized. Worker gross output rates were not found to change significantly but work quality did improve. Workers committed fewer errors, and errors that they did commit were less expensive to rectify.

Toy (1984) used a qualitative approach to study the interaction of members within circles and more specifically to determine whether there was a sense of enhancement of the individual through participation in the process. Results indicated both positive and negative effects. Frustration was felt out of feelings of non-accomplishment,

members developed better communication networks, and members needed to understand interpersonal and group dynamic skills more clearly. Management was also found to be lacking in leadership skills essential for effective participatory decision making.

In a study of 69 companies which had quality circle programs for a minimum of six months, Reynolds (1985) examined nine performance factors: quality, productivity, cost-effectiveness, employee development, training, communication, absenteeism, turnover, and morale. While the majority of 126 corporate representatives projected improvements in quality, employee development, communication, morale, cost-effectiveness, and training, such improvement was also observed in productivity. The number and magnitude of improvements increased in conjunction with the extensiveness of use and length of time period of the quality circle program.

Rafaeli (1984) investigated the amount of influence organizational members feel they have on their jobs, perceptions of characteristics of their jobs, and perceptions of the nature of the quality circle experience. Quality circle members and non-members in an electronics manufacturing organization were administered questionnaires. Quality circle members reported a significantly higher degree of perceived influence in the problem-solving process in their work than non-quality circle members.

Employees who reported equilibrium between the desired and available influence were the most satisfied with their job and with their quality circle experience. No significant differences in job design perceptions were found between employees who were members of quality circles and those who were not.

In a study of five organizations, Shores (1985) tested the relationship between quality circle participation and job satisfaction and found that a relationship existed between the two when other independent variables such as employee income and age were accounted for.

In a comparative study of three manufacturing firms with quality circle programs, Liverpool (1986) found a relationship between participant decision making and four outcome variables (organizational commitment, job satisfaction, absenteeism, turnover) for the total sample, but not consistently across the companies. No consistent moderating effects (structural variables, individual employee variables, management attitudes toward participation) emerged in the overall sample, or in two of the companies.

Platten (1984) conducted a study of job enrichment (operationalized through quality circles) on organizational commitment and four outcome variables (satisfaction, absenteeism, productivity, and quality) in a large manufacturing firm through administration of questionnaires

to quality circle members and non-members and through acquisition of organizational data on some of the variables involved. Autonomy and feedback were found to be higher for the quality circle members, as were commitment, productivity, and quality; such effects were not noted for levels of absenteeism and satisfaction. Organizational commitment was found to be related to the job enrichment variables but not the outcome variables utilized in the study.

In a study of 165 employees in two firms, Nale (1985) noted no significant differences between quality circle participants and non-participants in terms of anomia, alienation, departmental commitment, and organizational commitment. Further, both groups of employees indicated that the quality circle information they acquired emanated essentially from social sources, opposed to purely formal ones.

Benjamin (1983) conducted a study of 611 quality circle participants and 118 non-participants of a manufacturing organization and found that: (a) while organizational commitment levels did not vary as a function of quality circle participation, a modestly positive correlation did emerge between commitment and participant assessment of circle success; and (b) for non-participants, awareness and knowledge of the corporate quality circle program affected commitment levels.

Gomez (1983) investigated the effects of employee quality circle participation on worker quality of life perceptions and worker productivity in a high-technology organization. Two pilot circles consisting of twelve members each were administered pre-test/post-test questionnaires. Results indicated a definite change in employee perception of improved quality of work life. In productivity improvement, a two-to-one payback on invested costs was achieved. Subjects were also reported to increase the amount of individual work produced by approximately 20%.

Marks, Mirvis, Hackett, and Grady (1984) investigated the impact of participation in a quality circle program on employee perceptions of quality of work life and in productivity and attendance behaviors. Forty-six circle participants and 46 non-circle participants were surveyed through questionnaires before and after implementation of the quality circle program. Participants were direct labor employees in a manufacturing organization. There was a 20-month time interval between pre-test/post-test measures. Organizational records also were obtained from six months before to 24 months after adoption of the quality circle program. Multiple regression analysis revealed a positive relationship between quality circle participation and changes in quality work life perceptions in areas directly involved in quality circle activities

but not in more general work life areas. Specifically, quality circle participation had some influence on employee perceptions of participation, decision making, group communication, accomplishment, and enhancement of opportunities and skills needed for organizational advancement. Yet no effect was observed in communication through the total organization, job meaningfulness and challenge, or personal responsibility for work. Results of the study suggested that quality circle involvement acted more to provide social support to buffer participants from negative contextual factors than to enhance quality of work life. Quality circle participation also led to improvement in employee productivity and absenteeism rates.

Through the administration of questionnaires to 340 middle managers in 10 Saudi Arabia based petrochemical, multinational organizations, Elmuti (1985) noted that through the use of participatory decision-making programs similar to quality circles, employee interest in productivity and work commitment could be enhanced and that there was overwhelming support for participative management systems over autocratic ones among those surveyed.

Griffin and Wayne (1984) investigated the difference between effective and less effective quality circles in nine manufacturing plants in a large midwestern organization located in six states. Subjects consisted

of 457 employees who were organized into 44 quality circles. Effectiveness was defined as the number of quality improvements suggested, the number of quality improvements adopted, and average member satisfaction. Variables measured for each group included cohesion, performance norms, satisfaction with leader, job co-workers, intrinsic satisfaction, extrinsic satisfaction, self-esteem, self-monitoring, and perceptions of organizational commitment to the quality circle concept. Effectiveness measures were collected for a 12-month period. Individual perceptions of group and social variables were collected from all quality circle members at the approximate mid-point of the time period. Since the unit of analysis in the study was the group, all individual responses were averaged to provide an overall group profile. Results suggested that significant differences exist between effective and less effective quality circles along dimensions of cohesion, performance norms, job satisfaction, intrinsic satisfaction, perceptions of organizational commitment to the quality circle concept, self-esteem, and self-monitoring. No differences were found along the dimensions of leader satisfaction or extrinsic satisfaction.

Using the development and implementation of two proposals by a quality circle as a criterion for success, Brockner and Hess (1986) examined self-esteem and

performance levels of successful and unsuccessful quality circles (66 workers, nine circles) in a computer manufacturing firm. The results of the study indicated that the mean self-esteem level of quality circle members was highly predictive of the task performance of the circles, with circle size, longevity, and function held constant. These results were in accord with those reported by Griffin and Wayne (1984).

Eyo (1986) studied emergent fantasy themes, stories, analogies, incidents, and inside jokes of line-unit managers, employees, and facilitators in a multinational corporation through focus group interviews in connection with the practice of involvement team programs. Two rhetorical visions emerged from the interviews: (a) the vision of participative productivity (as beneficial to the program); and (b) the vision of victimage, which cut across formal organizational boundaries and included all segments of organizational representatives (in terms of distress, frustration, and unhappiness over several unresolved issues/problems triggered through the team process).

In a study of quality circles in an electronics manufacturing firm utilizing interviews, observations, and a survey questionnaire for data collection, Abbott (1984) found that desire for participation was a salient variable in establishing a relationship between job

satisfaction and selected attitudes toward participation. Furthermore, in the context of the firm examined, membership in the quality circles did not generate a strong desire for participation, management was criticized for getting the way of the program, and the circles were categorized as "manager-dominated," "stable," or "in crisis."

Through examination of quality circle programs in 14 organizations, Thomas (1985) found that management support was the best predictor of circle performance. Furthermore, training emerged as a parsimonious predictor, with the instructor, the duration of the training, and the instructional content acting as important moderators in the relationship.

In a study of two unionized companies and two non-unionized companies, Smith (1984) performed document analysis, on-site observations, and interviews with white collar and blue collar quality circle participants. Among her findings were that: (a) males responded more favorably to the interpersonal dimensions offered by quality circle participation, while females reacted more favorably to the task or achievement potential association with such experience; (b) an employee's ability to deal with job dissatisfaction changes as a result of quality circle participation; and (c) quality circle development and success are dependent upon comprehension of and

adherence to the process, circle and program leadership competencies, and the degree to which the circle's results are meaningful.

Through interviews, observations, and administration of a questionnaire in two organizations, Nottenburg (1985) found that quality circles alone had little impact on a variety of attitudinal and behavioral measures, with the exception of subject reactions to the phenomenon itself, and that two contextual factors, the extent of middle management support and the degree to which the program could change work processes in the organization, were important factors in the formulation of individual reactions to quality circles.

Griffin (1987) examined quality circles in two manufacturing plants of an electronics company over a three-year period utilizing an experimental group and a comparison group. In addition to baseline measurements of the variables studied, the researcher conducted assessments at three points in time. He found that all four primary dependent variables (job satisfaction, organizational commitment, performance, and turnover intentions) improved gradually in the first 18 months and then decreased subsequently to their initial levels. The researcher speculated that the participation needs of the circle members affected the results of the study, such that in the initial part of the time period members felt

a need to participate, the quality circle program serving a positive function in this regard, but then subsequently members experienced participation saturation, leading to declining levels on the variables studied.

Steel, Mento, Dilla, Ovalle, and Lloyd (1985) performed an evaluation of quality circle programs in two defense organizations, employing 107 military maintenance personnel and 165 base medical personnel. The quality circle program consisting of maintenance personnel was more successful than that for the medical personnel. The former program received more managerial support, while the latter program was found to have inadequate training and little managerial support.

In a study of quality circle leaders and members and non-members in two organizations, Zahra (1983) found that: (a) quality circle leaders perceived their jobs differently than other foremen did; (b) quality circle membership was related to changes in quality of work life perceptions; (c) pressuring foremen into quality circle leader roles resulted in negative affective responses to the circles; (d) member training, perceived management support, and a voluntary quality circle participation policy were the major contributors to quality circle effectiveness. No support emerged for a relationship between quality circle membership and satisfaction.

Pesek (1985) examined seven organizations employing quality circle programs through the administration of questionnaires to 90 supervisors and 420 subordinates and the gathering of anecdotal data from interviews with program coordinators/facilitators, members, and other employees. Among his findings were that: (a) human resources-oriented supervisors did not perceive employee participation in such programs as having a greater impact on decision quality, productivity, and output quality than human relations-oriented supervisors; and (b) non-members perceived the average supervisor to be significantly less capable than themselves in comparison to members in conceptualizing the same target source.

Woods (1985) conducted a study of leadership styles in quality circle and non-quality circle groups in manufacturing organizations. No evidence emerged for a difference in self-perceived leadership style between both sets of supervisors or in the degree of agreement in leadership style between supervisor and subordinates. However, significantly more quality circle members perceived their supervisor as more of a participatory manager than did those employees not in quality circles.

Berman and Hellweg (1987) investigated the relationship between perceptions of supervisor communicator competence and supervisor satisfaction as a result of quality circle involvement. The results of the study,

performed in a defense contracting organization, indicated that supervisors who had participated in the program for six months were perceived by their subordinates as being more communicatively competent (particularly on an encoding dimension) than were supervisors who had just joined the program. In addition, their subordinates were more satisfied with them as a result of that experience. However, the supervisors who had been involved in the program for six months did not perceive themselves more communicatively competent than the new circle supervisory personnel.

In a study of a large public utility organization, Miskin (1986) found that quality circle participation was significantly related in perceptions by members of their supervisors. Successful leaders were described as being high in task-oriented and relationship-oriented behaviors. Additionally, participation was found to be associated with higher ratings of leader effectiveness and job satisfaction.

Greater improvement in communication was reported among quality circle workers and between these workers and management than for non-participants in a study performed by Byrd (1986). Furthermore, job ambiguity levels were lower for quality circle members than for their counterparts. No differences were found between groups on job satisfaction and job overload levels.

Fifty members and 50 non-members were assessed in the study.

Elvins (1985) surveyed the attitudes and opinions of 102 factory workers from five high-technology organizations through questionnaires and subsequently conducted 24 follow-up interviews, finding that quality circle participation had positive effects on perceived individual power/influence, communication effectiveness with one's supervisor, subordinates, and to some degree with peers. Specifically, it was more common for communication with a respondent's immediate supervisor to be reported as improved, while communication with upper management remained the same. Among the areas of organizational communication not affected by quality circle participation were opportunities for advancement, belonging/acceptance by others, and tangible rewards.

Stohl (1984) investigated the communication changes brought about by the implementation of a quality circle program in a large New Zealand manufacturing organization. One hundred and eighty hourly workers were interviewed and administered questionnaires concerning communication climate, communication networks, communication problems, job satisfaction, and role identification. Possible differences in perceptions of communication climate and actual communication behavior between quality circle and non-quality circle members were examined. This study was

conducted over a two-month time period and one-way analysis of variance was used to assess differences in communication patterns. Results indicated that quality circle membership had a positive effect on workers' attitudes, interactions, and communication performance. Quality circle members reported greater satisfaction with their role in the organization and were generally more positive about communication. On the basis of the data collected, the researcher concluded that quality circle members communicate with more people across organizational levels and are in a better position to understand the workings of the organization as a whole.

In a second study, Stohl (1986) interviewed 180 randomly selected hourly workers at the firm over a two-month period, asking questions pertaining to their membership in quality circles, communication variables, job satisfaction, and general attitudes. Results suggested that quality circle membership had an impact on the communication patterns across the organization. Emergent networks of quality circle members were found to have consequences for cognitive processing, members' attitudes, perceptions of the communication climate, and the overall effectiveness of the organization. Quality circle members who occupied linking roles had better attitudes, knew more about the organization, shared this information with other quality circle members, and were

less likely to drop out of the program. On the basis of the data collected, the researcher concluded that quality circle programs provide structures and encourage communications that cut across the inherent divisions of an organization.

Employing interviewing and network data as a focus for analysis, Stohl (1987) examined the relative embeddedness of 11 quality circles into the firm as a whole. Among her findings were that: (a) circles that transcend their boundaries and are highly embedded have a greater proportion of their proposals accepted and implemented; (b) group cohesion provides a better indicator of member perceptions of circle effectiveness than do networking factors; (c) circles which were linked with the greatest number of organizational representatives outside their boundaries, and had been in the firm the greatest length of time, were perceived the most effectively by company supervisors and managers.

In a study of quality circles in a food-retailing organization, Mohrman and Novelli (1985) utilized both quantitative and qualitative measures of productivity and attitudinal effects. Survey data were collected five months prior to circle activity and three and ten months after circle implementation. The researchers noted a slightly more positive productivity trend for the quality circle group than for a control group but cautioned that

attribution to the program could not necessarily be made due to other contextual factors.

Attitudinal scores dropped off relatively strongly for the control group over the 15-month period of data collection, while for the experimental group these scores did not change much. Significant interaction effects were found for the following measures: feeling informed, feedback from supervisors and manager, problem-solving and decision-making involvement, teamwork, belief in the human orientation of the company, and external turnover intent. No differences between the groups and little change within either group were noted in the areas of trust and intrinsic motivation. The researchers speculated that the decreases in the control group scores and the relative stability of the experimental group scores may have been due to the circle program's ability to buffer disruptions occurring in the organization at the time. Additionally, within the experimental group, the researchers found that: (a) scores for quality circle members who stayed with the entire program increased on measures of problem-solving and decision-making involvement, feedback from the department manager, trust, belief in the human orientation of the company, and declined on turnover intent in comparison to those for employees who had partial or no circle involvement; and (b) scores for those employees with partial or no involvement declined

substantially.

Heelan (1984) performed a qualitative study of quality circles in three types of organizations (an industry, a human service agency, and an educational institution) by interviewing chief executive officers, middle managers, circle facilitators, and circle members. Through a comparative analysis of sites, the researcher identified 35 factors related to quality circle success which could be utilized in assessing programs already operationalized, as well as for programs in the process of being designed.

Wolff (1985) conducted an investigation of a quality circle program in a county government organization through the use of questionnaires, observation, and organizational documents. Three experimental and three control sites were examined over a 17-week period. For two of the three quality circles, performance indices significantly improved. Absenteeism rates lowered for quality circle participants. Supervisory ratings were similar for both types of groups. On the basis of the emergent data, the researcher concluded that the quality circle intervention resulted in more behavioral than attitudinal changes.

In a comparison of quality circle programs in three public bureaucracies (federal, state, and local agencies), Holmes (1985) found three major factors associated with the success of the federal agency in implementing its

program: mandatory quality circle training for all management and supervisory personnel, similar concurrent activities, and leadership committed to the program. The two factors identified in the local and state agencies for lack of success were political transition and fiscal restraints.

Gunatilake (1984) followed two ongoing organizational developed programs in two hospitals for eight months, the first utilizing two quality circle groups and the other incorporating a team building intervention. Measurements were taken at the beginning of the study and at two subsequent intervals four months apart, and consisted of assessments of impacts of the interventions involved upon employee attitudes and organizational processes and productivity. Observational and questionnaire techniques were employed.

Productivity improvements were noted in one of the two quality circles. Organizational processes declined or remained the same in the two quality circles, while employee attitudes significantly improved in one of them. The researcher concluded that differences in the outcomes of the quality circles could be attributed to the leadership styles of the respective supervisors involved. The team building group demonstrated organizational processes changes but not at a significant level.

In an evaluation of a quality circle program in a

health care setting, Lewandowski (1984) found that: (a) participation helped employees improve their problem-solving, decision-making, and team-building skills; (b) communication was enhanced throughout the hospital facility; (c) employees became more aware of organizational goals; (d) management became more sensitized to employee work issues; and (e) participant and non-participant work attitudes for several key items improved over time.

After a four-month operative period, Christian (1985) conducted a naturalistic investigation of a residential institution's quality circle consisting of nine psychiatric attendants and their immediate supervisor (circle leader) to assess its impact upon the participants and the organization. His findings indicated that the quality circle was somewhat effective in enhancing attendant self-esteem and involvement in workplace decision making and improving the quality of care. On the basis of a questionnaire focusing on 37 job related topics administered to 59 attendants and a companion version to 29 supervisors, the researcher learned that all agreed that the attendants should have an increased role in decision making, with the supervisors indicating reluctance to share this process in areas within their sphere of direct control.

Using pre-test and post-test measures of a quality circle program in a hospital setting, Andiorio (1985) found that for 48 employees 13 months in the program, the

experience provided a significant positive impact on the following perceptual categories: creativity, productivity, organizational structure, communication, conflict management, human resource management, participation, and leadership (with the greatest effect noted on creativity).

Littell (1984) tested perceptions of organizational climate and productivity among members of experimental and control groups to ascertain the utility of a modified quality circle approach in an educational setting. Pre-test and post-test questionnaires were administered at the eight experimental and seven control group schools. Significant differences were found between the groups.

In a study of quality circle programs at four school sites, Sork (1985) found that the attitudes of members toward their work environment improved in comparison to those of non-members and that quality circle involvement improved personal relationships at the sites.

Ames (1984) investigated whether quality circles result in a positive impact upon employee quality of work life perceptions in two experimental school sites. Analysis of data revealed a statistically significant improvement in environmental conditions in one school using quality circles, but not in the other. On the basis of the emergent data, the researcher concluded that schools in which the principal exhibits a high concern

for people, a balanced concern for task, a collaborative approach to problem solving, and a commitment to implementing recommendations offered by quality circles will be more apt to produce a positive impact upon quality of work life perceptions than schools in which these factors are not evident.

In an elementary school setting, Feagan (1986) administered job satisfaction and organizational commitment measures to quality circle members and non-members in a post-test only design. Neither outcome variable emerged in relationship to quality circle participation. Job satisfaction levels of circle members were associated with their ages, total years of teaching experience, and years in the present school.

Truelove (1986) conducted a comparative study of elementary schools with quality circle programs and ones without them. The presence/absence of quality circles was not found to be associated with employee perceptions of organizational climate or leader behavior of the principals. However, composite test scores of 7th grade students and mathematics achievement test scores of 5th and 7th grade students were found to be higher in the quality circle schools.

In an effort to determine quality of work life-quality circle program principles and practices in higher educational institutions, Beechem (1986) studied 10 such

institutions in depth and noted the following: (a) weak adherence to the principles/practices of trust, egalitarianism, continuous training, consensus decision making, commitment to quality of work life-quality circles from the administration, and employee recognition; and (b) relatively strong adherence to the principles/practices of voluntary quality of work life-quality circle membership, use of management consultants, and task groups (quality circles) utilizing problem-solving techniques.

In an undergraduate classroom setting, Chongapiratanakul (1986) tested three instructional formats to determine their relative effects on test scores and student learning. The two treatment groups offered a cooperative quality circle instructional opportunity called the Jigsaw Model, with one group having a facilitator trained in quality circle techniques and the other having a facilitator trained not only in these techniques but also the instructional content. The control group did not feature a coordinating facilitator. No significant differences were revealed among treatment groups on both immediate and delayed test scores. Student learning was no different in the treatment groups as a function of the training given to the facilitators.

In a laboratory study examining quality circles, Benscoter (1983) investigated the nature of group leader/member interaction among 90 undergraduates, with nine

graduate students serving as group leaders. The groups were divided as follows: (1) three control groups of ten members and one leader per group who received no training; (2) three leader-trained groups of ten members and one leader per group whose leaders were trained in the use of problem-solving techniques; and (3) three leader-member-trained groups whose leaders and members were trained in the techniques. Results indicated that a group's ability to recognize facts in the data set did not increase in proportion to the number of people in the group trained to use the techniques. The control group performed better than either treatment group. However, the level of involvement of group members in the problem-solving process was greater for the treatment groups than for the control groups.

Hirshfield (1983) tested the use of quality circle techniques in a university classroom setting and found that as a result of the necessary instructional format revisions: (a) student-instructor contact was increased; (b) circle members underwent a bonding process; (c) classes became more responsive; (d) students became convinced that their input in the process was important; and (e) student decision-making and problem-solving skills were enhanced, as was their willingness to accept responsibility and obligation.

Finally, in a study of both a federal agency and

university utilizing pre-test and post-test measures, Stohl and Jennings (1987) noted that quality circle volunteers were less satisfied with core dimensions of their jobs than their counterparts but were at the same time committed to their organizations and saw their participation as an opportunity to voice their dissatisfaction and improve work life concerns. More specifically, in the federal agency sample volunteers scored significantly lower than non-volunteers on measures of job involvement, participation in decision making, communication climate, task significance, autonomy, organizational/individual goal congruence, work group support, and skill variety. In addition, the university sample demonstrated significant differences between volunteers and non-volunteers on measures of intrinsic job satisfaction, communication climate, support for creativity, as well as age, organizational tenure, and educational level.

Discussion

Beyond the independent analysis of the 52 studies described, it is appropriate to examine them comparatively in terms of the specific variables involved, their methodologies, and their findings in an attempt to interpret their contributions to the quality circle literature.

First, about one-third of these studies provided a comparative analysis of data across member and non-member groups. Both blue collar and white collar circles were assessed, with sample sizes varying greatly. Second, the majority of studies were conducted in industrial organizations (many in high tech/electronics areas), with ten additional ones reported from educational settings (elementary through post-secondary levels), four from medical care settings, and four from government agencies. Comparative analysis across organizations was offered in about 40% of the studies described. One study in particular (Heelan, 1984) examined quality circles across three types of organizations: an industrial firm, a human service agency, and an educational institution. Almost without exception, the studies reviewed were naturalistic in nature as opposed to structured laboratory experiments.

Third, the observational time frame for these studies varied considerably, with as much as two years involved in a study conducted by Stinnett, Perrill, Boster, and Borstelmann (1983). About one-quarter of the studies reported pre-test/post-test designs.

Fourth, about one-third of the studies utilized multiple methods for data collection. Specifically, questionnaires, interviews (with circle members, leaders and facilitators, management representatives, non-members),

observation, and organizational data (e.g., relating to employee performance, absenteeism, turnover) were employed. A single study by Eyo (1986) utilized focus group interviews. This same study generated the only rhetorical analysis of quality circle processes among the 52 projects reported herein.

Communication variables were a primary focus in five of the studies reported (Elvins, 1985; Eyo, 1986; Stohl, 1984, 1986, 1987). Eight other studies (Andiorio, 1985; Berman & Hellweg, 1987; Byrd, 1986; Marks, Mirvis, Hackett, & Grady, 1984; Mohrman & Novelli, 1985; Reynolds, 1985; Stinnett & Perrill, 1982; Stohl & Jennings, 1987) examined communication variables in conjunction with a host of other variables. Among the specific communicative concerns these 13 studies examined were: communication climate, communication competence, communication performance, communication problems, communication network roles, quality of communication relationships, communication network embeddedness in the organization.

The majority of quality circle studies have been directed at outcome variables typically recognized by organizations in assessing their effectiveness: productivity, product quality, turnover, and absenteeism. Additionally, numerous studies have examined employee attitudes as a result of quality circle participation, specifically perceptions of: job satisfaction,

organizational commitment, job ambiguity, self-esteem, morale, organizational climate, role identification, and quality of work life.

A few studies have looked at subordinate perceptions of supervisors and at quality circle leadership styles. A couple of studies have examined subordinate perceptions of organizational influence as a result of quality circle involvement. Additionally, a few studies have looked at quality circle training factors as they relate to circle effectiveness and in particular the presence or absence of managerial support for such programs.

Generally speaking, the results of the studies presented herein suggest substantial evidence for a relationship between quality circle participation and productivity enhancement. Some evidence is also provided for a relationship between quality circle experience and quality of work life perceptions. The evidence appears to be mixed on establishing a relationship between quality circle membership and either organizational commitment or job satisfaction. While there are fewer studies involved to support the case, there does appear to be some evidence for a relationship between quality circle participation and enhanced employee self-esteem, morale, role satisfaction, and organizational influence levels.

Communication improvements emerged in several of

the studies reported in various forms. Andiorio (1985), Lewandowski (1984), Reynolds (1985) and Stohl (1984) cited improvements in communication in general. Byrd (1986) indicated better communication between workers and management. Elvins (1985) reported better communication with supervisors, subordinates, and peers. Sork (1985) noted enhanced interpersonal relations. Toy (1984) found more effective communication networking. Benscoter (1983) noted greater employee involvement. Stohl (1984) reported positive effects on communication performance. In addition to these findings, Stohl (1986, 1987) noted the positive outcomes of circles which transcend their boundaries communicatively and network actively within the organization and the associated characteristics of linkers in the process.

On the basis of the foregoing literature review and analysis, a number of directions for future research may be advocated: (1) supervisor-subordinate studies to assess upward distortion effects, supervisor communicator style, perceptions of supervisor-subordinate credibility and homophily as a function of quality circle experience; (2) communication competence perception studies relative to self-images of subordinates as a function of their role shift in quality circles; (3) communicative role expectation studies as a function of quality circle experiences of supervisors and subordinates; (4)

organizational culture studies as a function of circle generation of organizational agendas; (5) relational analysis studies as a function of supervisor-subordinate role shifts in quality circle sessions; (6) organizational socialization studies in the context of quality circles as a unique group process involving supervisors and subordinates in a tightly bonded functioning unit; and (7) subordinate satisfaction studies examining supervisory perceptions of subordinates as more organizationally involved employees.

Daniels (1984) offered additional suggestions for future inquiry by quality circle researchers:

1. Are quality circles really perceived by lower-echelon members to alter organizational rules and values and what is the connection between such perceptions and the members' general enactment of organizational role?

2. Do the communication and decision-making skills acquired in quality circle participation "spill over" into other aspects of organizational life and performance?

3. Is the quality circle a conversion tool for institutionalizing new organizational values or are new organizational values necessary in order to institutionalize quality circles? (p. 11)

Numerous researchers (e.g., Bormann, 1970; Jablin & Sussman, 1983; Putnam, 1983) have argued for the influx of research in group communication in the organizational

context to balance out the multitude of laboratory studies that have been conducted primarily out of the organizational context. Quality circles provide one means for organizational researchers to perform such studies. In particular, quality circles offer an outlet for process-oriented research.

Downs and Hain (1982) and Hellweg and Phillips (1982) have described problems which exist in the literature in regard to establishing a link between communication and productivity or performance. Some of the difficulties involved are centered in developing meaningful and consistent definitions and operationalizations of constructs and variation in measurement techniques. Quality circles, once again, may serve as a useful outlet for organizational communication scholars to further pursue this area of endeavor.

> The introduction of quality circles to an organization involves a multifaceted change in the person-job relationships of workers who become involved. The changes include training in a variety of new skills, greater goal setting and feedback for specific tasks, group approaches to problems, and restructuring of communication flow between workers and management. (Wood, Hull, & Azumi, 1983, p. 44)

Even though these changes appear simple in nature, the

scope of their impact extends beyond the cause-and-effect benefits of quality, cost, and morale. These changes involve "an underlying organization value on the right of participation that alters traditional power relations and the organization's exchange system" (Daniels, 1984, p. 10).

Studies need to be conducted in the quality circles context to assess these possible redefinitions of power relations and specific influence strategies employed in negotiating circle proposals for implementation. Only one study reported herein focused upon unionized versus non-unionized organizations in the context of quality circle program process; this, again, would seem to offer an intriguing area for further investigation.

Research needs to further document changes in communication patterns and structures as quality circles are implemented in organizations. "More specifically, since quality circles seem to cause noticeable changes in communication patterns at different levels of analysis, organizational communication studies of quality circles should search for relationships between macro and micro level communication behaviors" (Avery, 1985, p. 20).

Finally, only one study cited in this literature review empirically examined quality circle program outcomes against other employee involvement program outcomes (Gunatilake, 1984). Savage and Romano (1983) have

suggested that there are rather substantial differences between quality circle programs and quality of work life programs in their structure and orientation. Steel and Shane (1986) have further conjectured that some intervention procedures are more suitable for producing affective responses and their behavioral consequences (such as absenteeism and turnover), while others may be more appropriate for modifying performance outcomes, that the impetus for change and focus of change (e.g., work technology versus interpersonal relationships) may vary accordingly, as well as the type of support necessary, the consumption of tangible resources, and the immediacy of results. However, they have suggested that with the realization of these similarities and differences, traditional intervention programs can guide the successful development of quality circle programs. Research on the communication dynamics of these programs, from a comparative standpoint, may provide useful contributions to this development.

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